

juvenile plusminusve rubris recedit.

This form differs from the typical form of the species in having the upper portions of its stems and all the upper leaves, or sometimes the entire plant, red when young.

The type of the form was collected by Alma Lance Moldenke and Harold Norman Moldenke (no. 24355) on an open roadbank at Moose Meadow, Tolland County, Connecticut, on May 31, 1968, and is deposited in the herbarium of the Botanisk Institut at Aarhus Universitet, Aarhus, Denmark. This form sometimes grows in very extensive purestand colonies, while at other times it is interspersed with the typical green form of the species in precisely the same environmental conditions of soil, drainage, exposure to sunlight, etc. The type where the entire plant is red from top to base was not collected, but occurred in purestand colonies on roadbanks only a few miles from where the type specimens were gathered.

There is another form of the species known, L. quadrifolia f. variegata (Peck) House, in which the tips of the petals are orange. It is described in Bull. N. Y. State Mus. 47: 157 (1894) and 254: 559 (1924).

PRIVA LAPPULACEA f. ALBIFLORA Moldenke, f. nov.

Haec forma a forma typica speciei corollis albis recedit.

This form differs from the typical form of the species in having white corollas.

The type of the form was collected by Walter H. Lewis, Jr., John Duncan Dwyer, T. S. Elias, and K. R. Robertson (no. 926) at the edge of a river and adjacent rainforest and railway, Changuinola to 5 miles south at the junction of Río Changuinola and Río Terebe, at an altitude of 100 to 200 feet, Bocas del Toro, Panama, between December 17 and 19, 1966, and is deposited in the herbarium of the Missouri Botanical Garden at St. Louis.

SVIDA CONTROVERSA (Hemsl.) Moldenke, comb. nov.

Cornus controversa Hemsl. in Curtis, Bot. Mag. 135 [ser. 4, 5]: pl. 8261. 1909; Kew Bull. Misc. Inf. 1909: 331. 1909.

XYLOSTEON MORROWI (A. Gray) Moldenke, comb. nov.

Lonicera morrowi A. Gray in Perry, Narr. Exped. Chin. Jap. 2: 313. 1856.

ADDITIONAL NOTES ON THE GENUS VITEX. IX

Harold N. Moldenke

VITEX TRIFOLIA var. SIMPLICIFOLIA Cham.

Additional bibliography: Moldenke, Phytologia 17: 11-13, 45,

47, 50, & 54--56. 1968.

Van Steenis (1957) prefers to regard this plant as a subspecies, which he calls V. trifolia subsp. litoralis. He comments that the plant was considered as a valid species by Thunberg and by Blanco, later as a variety by Chamisso, Schauer, Makino, Ridley, and Benthams. "This evaluation as a variety has been maintained by later monographers (Lam & Bakhuizen van den Brink, Merrill, and Moldenke). Backer....., Corner....., and following him Backer & Meeuse.....have again treated it as a good, distinct species. And Corner has taken great pains to give arguments for this view. Contrary to Ridley.....who suggested to have seen it change into normal V. trifolia after transplantation to Singapore, Corner maintains that it maintains its habit and characters in cultivation and is no mere phenotype. He transplanted ten specimens to the Botanic Gardens, Singapore, where he also had living shrubs of V. trifolia and V. negundo, and has found that they retain their habit. As to the constancy of that character there remains hence little doubt, though additional experiments in raising inland plants from seed of the prostrate form and crossing it with V. trifolia are still a desideratum. In addition Corner assumes to have found differences with V. trifolia in the corolla, fruiting calyx, and the fruit. I have tried to verify these differences with many sheets preserved at Leyden but I cannot corroborate these statements. The fruits of V. trifolia and V. ovata offer no differences in size, shape, and internal tissue structure. That the inflorescences of V. ovata are smaller than the average size in V. trifolia I deem not significant, as they are borne on small side-branches. The only characteristics holding are vegetative in nature, viz the typical prostrate, rooting, runner-like branches, and the obovate, small, simple leaves, and geographic: its exclusive growth on the sandy beach."

Ohwi (1965) gives the distribution of the variety as "Honshu, Shikoku, Kyushu. — Korea, Bonins, Ryukyus, Formosa to se. Asia, Pacific Islands, and Australia." Bryan says that on Johnston Island it was "planted by man or introduced by some other means since 1923". Taniguti (1963) records it from Hemizima Island, Japan, while Hatusima (1962) records it from the Amami Islands in the Ryukyu Archipelago.

Nobuhara (1967) tells us that "The shorter the distance to the coast line, the less the cover of Canavalia and the more, to some extent, that of Vitex rotundifolia expands." Nobuhara, Okada, & Fujihira (1962) report that our plant has average tolerability toward salt spray from typhoons. Wilson found is common on Quel-part Island, while Chiao refers to it as a "rare bush along seashore" in Shantung and Ching describes it as "a low dense sand-binding shrubby perennial herb on active sand, up to 1 1/2 ft. tall" in Chekiang.

A letter to me from Berta Čerin, dated April 29, 1962, announces that she plans to study the chemical constituents of this plant.

Additional vernacular names recorded for the plant are "hái-po-

kiu", "hamagō", "hamagō", "hama-gō" ["hama" = the sea], "hamasikimi", "kolokolo-kahakai", "mosquito sage", "peh-po-kiu", "pohinahina", "polinalina", "simple-leaf chaste-tree", "simple-leaf shrub chaste-tree", and "taiwan-hamagō".

The Lam (1924) reference given in the bibliography of this plant is often dated "1925", but the latter date is merely the title-page date for the volume; the page involved actually was issued in 1924. Van Steenis (1957) gives the date of publication of Benthams name (1870) for this taxon as "1876". Hara (1948) cites Merrill's *Enum. Philip. Pl.* (1923) as page "347" in error. The Hooker & Arnott (1836) references in the bibliography and list of illustrations listed previously are sometimes dated "1841", but pages 193 to 288 and plates 40 to 59 of this work were actually issued in 1836.

Lam (1924) cites Kotara s.n. from the Bonin Islands and Koch s.n. from Dutch New Guinea. Hatusima (1966) cites his no. 28565 and gives the general distribution of the variety as "Japan to Malaysia, Australia and Polynesia". Li (1963) cites Faurie 452 & 1169, Gressitt 523, A. Henry s.n., Oldham 382, Owatari s.n., Price 494 & 650, Takenouchi s.n., E. H. Wilson 10978, and Yamamoto s.n. from Formosa. Miquel (1870) cites Oldham 1 [specimen?], Bürger 7 [specimens?], Keiske 1, Maximowicz 1, and Siebold 3.

The A. Henry 12302 and Saint John & Fosberg 16976, distributed as this variety, are actually var. *subtrisecta* (Kuntze) Moldenke. On the other hand, many collections of var. *simplicifolia* have been distributed in herbaria as typical *V. trifolia* L.

Additional citations: CHINA: Chekiang: Chiao 1445 [Herb. Univ. Nanking 14644] (Bi, W-1427017); R. C. Ching 1967 (W-1246828). Shantung: Chiao 2774 (W-1596234). CHINESE COASTAL ISLANDS: Hainan: Fung 20500 (Mi); Liang 62926 (W-1670956). Lantau: McClure s.n. [Herb. Lingnan Univ. 13095] (W-129810); Taam 1702 (W-2244609); Tsang s.n. [Herb. Lingnan Univ. 16649] (W-1249810). HONGKONG: Bodinier 679 (W-2497124); C. Wright s.n. [Hong Kong] (W-44911). THAILAND: Larsen, Smitinand, & Warncke 1246 (Ac, Rf). INDOCHINA: Tonkin: Pételot 317 (W-1716990). KOREA: R. K. Smith s.n. [Aug. 23, 1932] (Bi); Mrs. R. K. Smith s.n. [8-10-31] (W-1757013). KOREAN COASTAL ISLANDS: Quelpart: In-cho 1124 (Mi, S); E. H. Wilson 9392 (W-1054188). WESTERN PACIFIC ISLANDS: JAPAN: Anashima: Koidzumi s.n. [5.8.1922] (Mi). Honshiu: Collector undetermined 364 (W-73901), s.n. [Sagami, 17 Juli 1910] (W-1133035); Ichikawa 200661 [122] (W-1347444); Kirono 762 (S, W-2336304); Maruyama & Okamoto 1600 (W-2315764); Maximowicz 90 (W-73900); Sasaki & Tagasi 606 (Mi, W-2156562); Savatier s.n. [Yokaska] (W-2497127). Kiushiu: Hurusawa 202 (W-2038128); Takenouchi 1728 (W-1271675). Shikoku: Collector undetermined s.n. [Susaki, Tosa, Aug. 16, 1892] (W-206183). FORMOSA: Gressitt 523 (N); A. Henry s.n. [Takow] (W-455205); Takenouchi s.n. [Aug. 5,

1940] (W--2063401); E. H. Wilson 10978 (W--1052371). PHILIPPINE ISLANDS: Luzon: Haenke s.n. [Luzon, 1792] (Bi). Mindoro: H. H. Bartlett 13708, in part (Mi). Sibuyan: Elmer 12135 (Bi). BONIN ISLANDS: Anijima: Kondo 115 (Bi). Chichijima: Kondo 33 (Bi). Imajima: H. L. Porter 3 (Mi). Island undetermined: C. Wright s.n. [Bonin Islands] (W--73896). VOLCANO ISLANDS: Iwojima: H. L. Porter 3 (W--1944269). MELANESIA: NEW HEBRIDES: Aneityum: Kajewski 690 (Bi). AUSTRALIAN REGION: AUSTRALIA: Queensland: Brass 1919 (Bi). POLYNESIA: HAWAIIAN ISLANDS: Hawaii: A. F. Judd s.n. (Bi). Kauai: F. R. Fosberg 12734 (Bi, Bi); A. A. Heller 2731 (Bi, Ms--30950); Saint John, Hosaka, Hume, Inafuku, Lindsay, Masuhara, Mitchell, & Wong 10841 (Bi); C. Skottsberg 1059 (Bi). Lamai: G. C. Munro 90 (Bi), 122 (Bi), s.n. [Kaena Point, 12/2/15] (Bi). Maui: Topping s.n. [O. Degener 9504] (Bi, Lb--15779, Mi). Molokai: O. Degener 9506 (Bi, Mi), 9507 (Bi). Niihau: Handy s.n. [Aug. 14, 1931] (Bi); J. F. G. Stokes s.n. [Kiekie] (Bi). Oahu: O. Degener 10018 (Bi, Mi), 11245 (Bi), 11247 (Bi); F. R. Fosberg 8881 (Bi), 10360 (Bi), 13148 (Bi, Bi), 14184 (Bi); J. A. Harris C.242140 (Bi), C.242201 (Bi); Hathaway & Caindec 139 (Bi); Meebold s.n. [Paumalu, May 1932] (Bi); H. N. Moldenke 21808 (Bi, Ca, Fg, Mi); J. W. Moore s.n. [July 14, 1929] (Bi, Bi); J. F. Rock 43 (Bi, Bi); J. F. G. Stokes s.n. [Alaopapa, June 1-2, 1920] (Bi); Topping 3012 (Bi); M. M. Townsend s.n. [Oct. 20, 1940] (Mi); D. P. Wilder s.n. [Leilehua Plain, 1912] (Bi). Island undetermined: O. Degener 11246 (Bi); C. N. Forbes s.n. (Bi); Hillebrand & Lydgate s.n. (Bi); G. P. Wilder s.n. [1913] (Bi). CULTIVATED: Johnston Island: E. H. Bryan s.n. [August 30, 1944] (Bi).

VITEX TRIFOLIA var. SIMPLICIFOLIA f. ALBIFLORA (Y. Matsumura)
Moldenke

Additional bibliography: Moldenke, Phytologia 6: 197. 1958; Moldenke, Résumé 173, 388, & 479. 1959.

VITEX TRIFOLIA var. SUBTRISECTA (Kuntze) Moldenke

Additional bibliography: Warb. in Engl., Bot. Jahrb. 13: 429. 1891; Kuntze, Rev. Gen. Pl. 2: 510 & 511. 1891; Mak., Ill. Fl. Nipp. 186. 1940; Moldenke, Phytologia 3: 178. 1949; Moldenke in Humbert, Fl. Madag. 174: 72, 82, & 273. 1956; Moldenke, Phytologia 8: 88--90. 1961; Moldenke, Biol. Abstr. 37: 1062. 1962; Hocking, Excerpt. Bot. A.6: 534. 1963; Neal, In Gard. Hawaii, ed. 2, 727 & 728. 1965.

It is worth recording here that Makino's original Japanese description of his var. heterophylla has been rendered in Latin by Hara (1948) as "Folia aut simplicia aut tripartita". The corolla is described as "purple" on M. S. Clemens 11067bis and on Native collector DI.149 [Herb. Roy. Forest Dept. 3567], "reddish-

purple" on S. K. Lau 270, and "blue" on Rock 7838. Rock refers to the plant as a "common shrub along banks" in the Southeastern Shan States of Burma; it is also said to be common on the plains in Thailand, where the bark and roots are employed as a febrifuge and where the plant is known as "phi-suae". The plant has also been collected in sandy areas behind the beach on outer sandhills in Thailand, at 3000 feet altitude in New Guinea, and between 3000 and 4000 feet altitude in Yunnan! It has been collected in anthesis in February and June.

R. K. Godfrey 59186 bears a notation "locally naturalized in sandy lots" in Pinellas County, Florida. P. O. Schallert 23077 is var. variegata Moldenke in most herbaria, but the specimen of this number preserved in the Berlin herbarium shows no variegation, although the leaf-edges are irregularly turned over, which may be an indication of variegation.

Additional citations: FLORIDA: Pinellas Co.: R. K. Godfrey 59186 (H1-154718). BURMA: Shan States: J. F. C. Rock 2325 (W-1214807). CHINA: Yunnan: A. Henry 12302 (W-459013); J. F. C. Rock 2669a (W-1214891), 2969 (W-1213252), 7838 (W-1332140). CHINESE COASTAL ISLANDS: Hainan: S. K. Lau 270 (W-1629142). THAILAND: Larsen, Smitinand, & Warncke 1321 (Ac, Rf); Native collector DI.149 [Herb. Roy. Forest Dept. 3567] (W-2064795). WESTERN PACIFIC ISLANDS: RYUKYU ARCHIPELAGO: OKINAWAN ISLANDS: Okinawa: Field & Loew 21v (M1). PHILIPPINE ISLANDS: Mindoro: H. H. Bartlett 13708, in part (M1). INDONESIA: GREATER SUNDA ISLANDS: Sumatra: Hamel & Toroes 551 (M1); Schiffner 2454 (B1); Toroes 910 (M1); Yates 524 (M1). MELANESIA: NEW GUINEA: Northeastern New Guinea: M. K. Clemens 11067 bis (M1), 41503 (M1). SOLOMON ISLANDS: Bougainville: Waterhouse 60 [Herb. Mus. Yale Sch. Forest. 22664] (B1, B1). YASAWA FIJI ISLANDS: Viti Levu: J. W. Gillespie 4380 (B1); A. C. Smith 4559 (B1), 6078 (B1). POLYNESIA: LINE ISLANDS: Palmyra: E. Y. Dawson 19825 (B1). MARQUESAS ISLANDS: Island undetermined: Quayle 1281 [2181] (B1). TUAMOTU ISLANDS: Anaa: H. Saint John 14252 (B1). Rarotia: Doty & Newhouse 11724 (B1). SOCIETY ISLANDS: Raiatea: J. W. Moore 696 (B1). AUSTRAL ISLANDS: Rimatara: Saint John & Fosberg 16976 (B1). Rurutu: Chapin 853 (B1); F. R. Fosberg 11981 (B1); H. Saint John 16573 (B1); A. M. Stokes 1 (B1). CULTIVATED: Baker Island: E. H. Bryan 1315 (B1). Florida: P. O. Schallert 23077, in part (B). Hawaiian Islands: J. F. Rock s.n. [S. Kona, April 28, 1957] (B1). Johnston Island: K. P. Fosberg 15 (B1). Marshall Islands: F. R. Fosberg 36709 (B1).

VITEX TRIFOLIA var. SUBTRISECTA f. ALBIFLORA Moldenke

Bibliography: Moldenke, Phytologia 8: 90-91. 1961; Moldenke, Biol. Abstr. 37: 1062. 1962; Hocking, Excerpt. Bot. A.6: 534. 1963.

Additional citations: POLYNESIA: AUSTRAL ISLANDS: Rurutu: H. Saint John 16705 (Bi—isotype).

VITEX TRIFOLIA var. VARIEGATA Moldenke

Synonymy: Vitex trifolia variegata [Moldenke] ex Lord, Shrubs & Trees Austral. Gard., rev. ed., 232. 1964.

Additional & emended bibliography: Neal, In Gard. Hawaii, ed. 1, 641. 1948; L. H. Bailey, Man. Cult. Pl., ed. 2, 844 & 1114. 1949; Kuck & Tongg, Mod. Trop. Gard. 77 & 236. 1955; Moldenke, Phytologia 8: 91. 1961; Menninger, Seaside Pl. 154 & 155. 1964; E. E. Lord, Shrubs & Trees Austral. Gard., rev. ed., 232. 1964; Neal, In Gard. Hawaii, ed. 2, 728. 1965; Moldenke, Résumé Suppl. 15: 15. 1967; Moldenke, Phytologia 17: 52. 1968.

Illustrations: Menninger, Seaside Pl. pl. 223. 1964.

Lord (1964) describes this variety as "Vitex trifolia variegata with the leaves broadly cream-margined, a very showy shrub", and recommends it for coastal areas in Australia. Kuck & Tongg (1955) state that the plant is very wind-resistant.

The Berlin specimen of P. O. Schallert 23007 does not show any variegation, although its leaf-margins are turned over, and is cited by me herein under V. trifolia var. subtrisecta (Kuntze) Moldenke. It is very possible that the turning over of the leaf-margins is an indication that they were variegated there and that the specimen should, therefore, be cited here under var. variegata.

Additional citations: CULTIVATED: Florida: H. N. Moldenke 24094 (Ac, Rf). Hawaiian Islands: Ito s.n. [Schofield, May 1936] (Bi); C. S. Judd s.n. [Puunene, Feb. 8, 1940] (Bi); Neal s.n. [Nov. 19, 1944] (Bi), s.n. [July 9, 1945] (Bi); J. A. Price s.n. [May 10, 1943] (Bi).

VITEX TRIPINNATA (Lour.) Merr.

Additional & emended bibliography: Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 1: 582 (1893) and 2: 1036 & 1121. 1895; A. W. Hill, Ind. Kew. Suppl. 6: 219 (1926) and 9: 297 & 298. 1938; Merr. & Chun, Suryatsenia 5: 178. 1940; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 2, 1: 582 (1946) and 2: 1036 & 1121 (1946) and pr. 3, 1: 582 (1960) and 2: 1036 & 1121. 1960; Moldenke, Phytologia 8: 91—92. 1961; Moldenke, Biol. Abstr. 37: 1062. 1962; Hocking, Excerpt. Bot. A.6: 534. 1963.

Recent collectors have found this plant growing in evergreen forests, at 150 meters altitude, fruiting in August. The corollas are described as having been "yellow" on Clemens & Clemens 3394.

The Bejaud 223, in part, in the Berlin herbarium, cited by me previously as V. tripinnata, proves actually to be var. clemensorum Moldenke.

Additional citations: CHINESE COASTAL ISLANDS: Hainan: How 72997 (Bi). THAILAND: Larsen, Smitinand, & Warncke 1385 (Ac, Rf). INDOCHINA: Annam: Clemens & Clemens 3394 (W—1427499). Tonkin: Pételot 6398 (W—1759457), 6419 (W—1759467). State undetermined: Eberhardt 1132 [Hoa-Binh] (W—2497092).

VITEX TRIPINNATA var. CLEMENSORUM Moldenke

Bibliography: Moldenke, Phytologia 8: 92. 1961; Moldenke, Biol. Abstr. 37: 1062. 1962; Hocking, Excerpt. Bot. A.6: 534. 1963.

The Berlin specimen of Bejaud 223, previously cited by me as typical V. tripinnata, has been re-examined and proves to be var. clemensorum. It is, however, mixed with something not verbena-ceous.

Additional citations: INDOCHINA: Cambodia: Bejaud 223, in part (B).

VITEX TRISTIS S. Elliot

Additional bibliography: Durand & Jacks., Ind. Kew. Suppl. 1, pr. 1, 457 (1906) and pr. 2, 457. 1941; Moldenke in Humbert, Fl. Madag. 174: 74, 113—115, & 273, fig. 17 (1). 1956; Moldenke, Phytologia 6: 200—201. 1958; Moldenke, Résumé 157 & 479. 1959; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 3, 457. 1959.

Illustrations: Moldenke in Humbert, Fl. Madag. 174: 115, fig. 17 (1). 1956.

VITEX UBANGHENSIS A. Chev.

Additional bibliography: Prain, Ind. Kew. Suppl. 5, pr. 1, 273. 1921; Moldenke, Phytologia 6: 201. 1958; Moldenke, Résumé 140 & 479. 1959; Prain, Ind. Kew. Suppl. 5, pr. 2, 273. 1960.

VITEX UMBROSA Sw.

Additional synonymy: Nephandra dubia Willd. in Cothen., Disp. Veg. 8. 1790.

Additional bibliography: J. F. Gmel. in L., Syst. Nat. Veg., ed. 13, pr. 1, 2: 963 (1789) and pr. 2, 2: 946 & 963. 1796; Pers., Sp. Pl. 3: 361. 1819; Steud., Nom. Bot. Phan., ed. 1, 888. 1821; Griseb., Cat. Pl. Cub. 216. 1866; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 2: 308 (1894) & 1214 (1895) and pr. 2, 2: 308 & 1214. 1946; Asprey & Robbins, Ecol. Monog. 23: 385 & 411, fig. 20. 1953; Hocking, Dict. Terms Pharmacog. 32. 1955; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 3, 2: 308 & 1214. 1960; Moldenke, Phytologia 8: 92. 1961; Moldenke, Résumé Suppl. 15: 21. 1967.

Additional illustrations: Asprey & Robbins, Ecol. Monog. 23: 385, fig. 20. 1953.

Recent collectors describe this species as a tree, 12 m. tall, the stem diameter 50 cm. at breast height, the flowers scented, and the fruit orange, growing on steep wooded hillsides, at 1000 feet altitude. The corolla is described as "purple with yellow blotch at top of lower lip" on Stearn 976. Hocking (1955) reports the common names "boxwood" and "South American boxwood" for this species.

Additional citations: JAMAICA: Proctor 19783 (N); Stearn 976 (S).